

___BLDG. ___ELECTRICAL ___FIRE DEPT. ___IND. WASTE

BUILDING PLAN REVIEW WORKSHEET

DATE: 12/2/2004

ELECTRIC PERMIT - ELE04-1485 - INSTALL FIRE ALARM SYSTEM

PROJECT TITLE: CHUCK E CHEESE #780/INTERIOR RENOVATION/FIRE ALARM

ADDRESS: 3500 SW COL RD #200

COMPLEX:

CONTACT: D J P SECURITY SYSTEMS INC TEL: 3527322357

ENGINEER : <undefined value> TEL: <undefined value>

ARCH/DESIGNER: <undefined value> TEL: <undefined value>

CONTRACTOR: D J P SECURITY SYSTEMS INC TEL: 3527322357

PARCEL NO: 23728-000-00 DISTRICT:

THRESHOLD BUILDING YES _____ NO _____

UNDERGROUND UTILITIES YES _____ NO _____

SITE PLAN YES _____ NO _____

3 SETS SEALED PLANS YES _____ NO _____

2 SETS FLORIDA ENERGY YES _____ NO _____

SEPTIC TANK PERMIT REQUIRED - YES _____ NO _____ RECEIVED- YES _____ NO _____

SDC YES _____ NO _____

FIRE DEPARTMENT - YES _____ NO _____

ELECTRICAL - YES _____ NO _____

PLUMBING-YES _____ NO _____ HVAC-YES _____ NO _____ HANDICAP REQUIREMENTS: YES _____ NO _____

FIRE SPRINKLER YES _____ NO _____ COMPANY _____

BUILDING TYPE _____ SQUARE FOOTAGE _____

ANY MODIFICATION: YES _____ NO _____

BUILDING OCCUPANCY CLASSIFICATION:

NOTES:

REVIEWED
BY CITY OF OCALA
BUILDING ELECTRIC DIVISION

DATE 12-3-04

BY BR

3.2 Underwriters Laboratories (UL)

The 5204 is UL listed as a control unit for use in NFPA 72 systems. If the 5204 and its accessories are to be used as part of a UL installation, carefully read the UL requirements in this section. For more information on the following NFPA 72 standards, refer to the NFPA National Fire Alarm Code, 1993 Edition.

- Chapter 3
Local Protected Fire Alarm Systems
- Chapter 4
Central Station Fire Alarm Systems
Auxiliary Protected Fire Alarm Systems for Fire Alarm Service (City Box)
Remote Station Protected Fire Alarm Systems (Polarity Reversal)

3.2.1 Requirements for All Installations

General requirements are described below. When installing an individual device, refer to the specific section of the manual for additional requirements. See also the subsection below that describes special requirements for the type of installation (for example, Central Station Fire Alarm systems, Local Protected Fire Alarm systems, and so on).

1. All AC wiring to and from the 5204 cabinet must be enclosed in conduit.
2. Total 24-hour standby current must not exceed 875 mA in 12V mode or 438 mA in 24V mode. Total 60-hour standby current must not exceed 350 mA in 12V mode or 175 mA in 24V mode.
3. All electrical connections must comply with the ratings shown in Section 5.6.
4. Because the 5204 panel itself is the main source of alarm and trouble annunciation, you must select a location for the panel that allows alarms and troubles, including pre-alarms, to be heard by end-users responsible for maintaining the panel.

3.2.2 Requirements for Central Station Fire Alarm Systems

1. You must program a phone number and a test time (See Section 8, Step 69 and Step 76) so that the 5204 sends an automatic daily test to the central station.
2. In systems using class A (style D) zones (converted using the Model 7181 Zone Converter), do not use more than 5 waterflow devices. (See Section 6.2.5.)
3. Auxiliary relays may NOT be programmed to activate for Pre-Alarm. (See Section 8, Step 20.)

3.2.3 Requirements for Local Protected Fire Alarm Systems

At least one UL listed supervised audible appliance must be used.

3.2.4 Requirements for Auxiliary Protected Fire Alarm Systems for Fire Alarm Service

1. Do not exceed the current load restrictions shown in Section 4.
2. The Model 5220 Direct Connect module must be installed (see Section 6.2.2 for wiring).

3.2.5 Requirements for Remote Station Protected Fire Alarm Systems - Polarity Reversal

1. Do not exceed the current load restrictions shown in Section 4.
2. The Model 5220 Direct Connect module must be installed (see Section 6.2.2 for wiring).

4.2 Current Draw Worksheet

Device	Number of Devices	Current per Device	Standby Current	Alarm Current	
For each device, use this formula: This column X This column = Current per number of devices					
5204 Fire Control/Communicator	1	Standby:	120 mA		
		Alarm:	400 mA		
4180 Status Display module	(2 max.)	Standby:	20 mA		
		Alarm:	140 mA		
5205 Dialer	1	Standby :	10 mA		
		Alarm:	100 mA		
5220 Direct Connect module	1	Standby:	50 mA		
		Alarm:	50 mA		
5230 Remote Annunciator	(3 max.)	Standby:	60 mA		
		Alarm:	120 mA		
7181 Zone Converter	(4 max.)	Standby 12V/24V:	52/35 mA		
		Alarm 12V/24V:	90/65 mA		
Current Subtotals:			mA	mA	
Smoke Detectors Refer to device manual for current ratings. See Tables 6-2 and 6-3 for max. # per loop.					
		Standby:	mA		
		Alarm:	mA		
		Standby:	mA		
		Alarm:	mA		
		Standby:	mA		
		Alarm:	mA		
Current Subtotals:			mA	mA	
Notification Devices Refer to device manual for number of devices and current ratings.					
		Alarm:	mA		
		Alarm:	mA		
Current Subtotals:			mA	mA	
Additional Devices					
		Standby:	mA		
		Alarm:	mA		
		Standby:	mA		
		Alarm:	mA		
		Standby:	mA		
		Alarm:	mA		
		Standby:	mA		
		Alarm:	mA		
Current Subtotals:			mA	mA	
Total current ratings of all devices in system (add A through D)*:			mA	mA	
Total current ratings converted to amperes (x .001):			A	A	

* This information must be used with Table 4-1 and Table 4-2 to complete battery calculations.

Section 7

Normal Operation

The optional Model 5230 Remote Annunciator provides annunciation of trouble and alarm conditions, and can be used to program the system. Key functions for both the Model 5230 (Figure 7-1) and the 5204 built-in touchpad (Figure 7-2) are described in Section 7.1. Section 8 explains how to program the 5204 using the Model 5230.

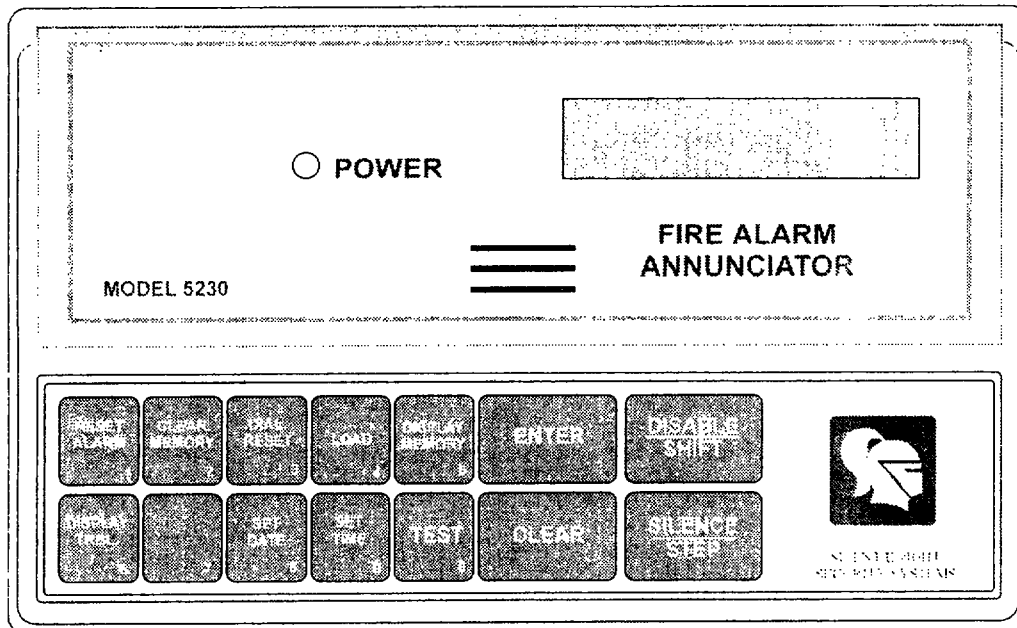


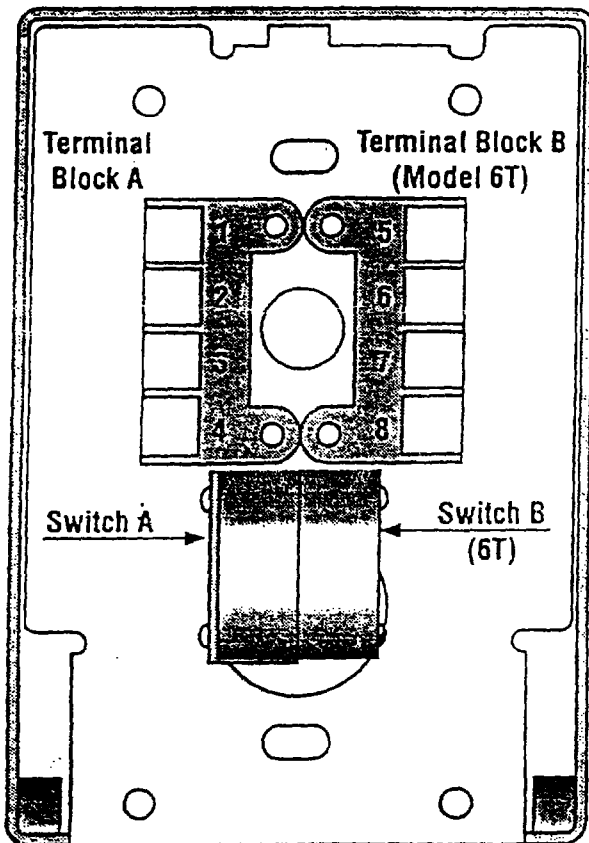
Figure 7-1 Model 5230 Remote Annunciator

The Model 5230 Remote Annunciator has a liquid crystal display (LCD) for displaying English-language messages. If the 5204 is not being programmed, the LCD cycles through all messages that are applicable at the time, showing a different one every 1.5 seconds. Refer to Section 9.3 for more information on troubleshooting messages.

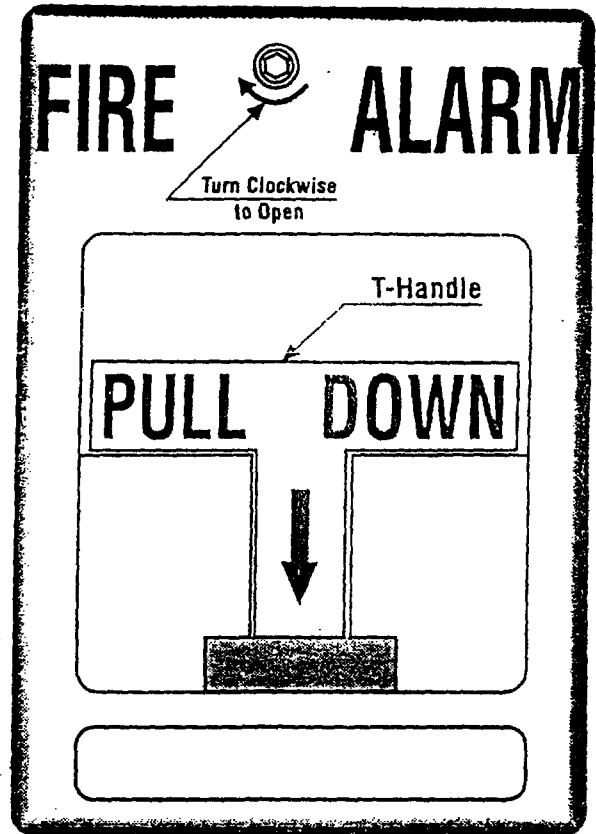
When AC power is being supplied, and the battery is fully charged, the POWER LED glows steadily. If the POWER LED is flashing, the AC power has been removed or the backup battery is low. If neither AC nor battery power is being supplied, the POWER LED is off.

The audio transducer buzzer produces short beeps to annunciate keystrokes. It also emits a long, high-pitched tone to denote a trouble condition or to indicate that an annunciator function has been entered incorrectly (see Section 7.1).

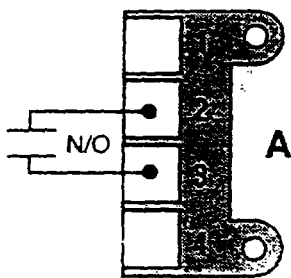
Rear View



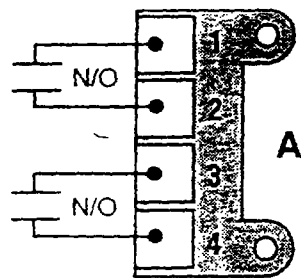
Front View



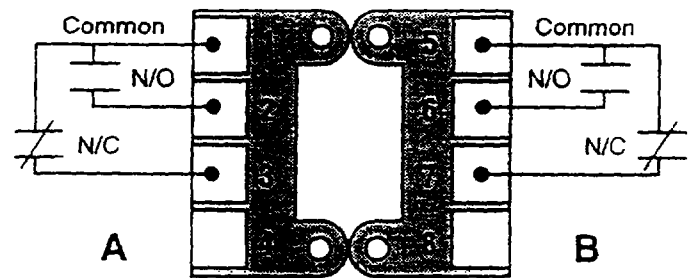
Electrical Wiring



Model 1T
SPST N/O



Model 2T
DPST N/O



Model 6T
DPST N/O - N/C - COM

Model	Terminal Block	Terminal Connecting	Switch Function	Terminal Connections			Contact Rating
				LED	Switch	Phone Jack	
1P	None	None	SPST	Leeds	Leeds	Leeds	10 amp @125 vac
1T	A	2 & 3	SPST	1(+) & 4(-)	1 & 4	1 & 4	10 amp @125 vac
2T	A	1&2 - 3&4	DPST	5(+) & 6(-)	5 & 6	5 & 6	10 amp @125 vac
3T	A	1,2, & 3	SPDT	5(+) & 6(-)	5 & 6	5 & 6	10 amp @125 vac
6T	A & B	1,2,3,5,6,7	DPDT	4(+) & 8(-)	4 & 8	4 & 8	10 amp @125 vac

Phone Jack: 1/4 • Key Switch: 3Amp@125Vac • Led: T1-3/4@24Vdc

Note: all contact ratings shown apply to closed station

Mounting Instructions on Reverse Side

2. This device does not contain a built-in signal. Alarm signals can only be generated by interconnection with separately installed signaling devices.

3. **DANGER** - This device will not operate without electrical power and fires often cause cutoffs of electrical power. This device does not contain a battery backup power supply. If the electrical circuit feeding the device is cut, or is not providing power for any reason, this device will not detect heat or provide any warning of a possible fire, nor will it provide any warning that it is not functioning.

4. **DANGER** - The rate-of-rise feature on the Heat Detector is subject to failure over time. The rate-of-rise feature should be tested by a qualified fire protection specialist annually to ensure that it is in working order. A plastic shield, part number P-847567-0017, is available to protect the fixed temperature element of the AI281B and AI282B series heat detectors during rate-of-rise testing. The testing procedure for the rate-of-rise feature is specified in the "Maintenance and Testing" section of instruction sheet P-847550-0820 supplied with this device. If a fire protection specialist is not available to conduct this testing procedure, you should contact your representative to arrange to have these important tests performed.

SPECIFICATIONS AND PRECAUTIONARY INFORMATION FOR THE AI280B SERIES HEAT DETECTORS



(NOT A LIFE SAFETY DEVICE - USE FOR PROPERTY PROTECTION ON

**READ THE INSTRUCTIONS SUPPLIED (P-847550-0820
BEFORE INSTALLING THIS DEVICE**

© Copyright 1988

Alarm Industry Products, 195 Farmington Avenue, Farmington, CT 0603

SPECIFICATIONS TABLE

Catalog Number (see note <u>A</u>)	281B	282B	283B	284B
UL Temperature Rating	135°F	194°F	135°F	194°F
Feature(s)	Fixed Temperature and Rate-of-Rise		Fixed Temperature Only	
UL Maximum Ambient Temperature at Ceiling	100°F	150°F	100°F	150°F
UL Recommended Coverage (see note <u>B</u>)	2500 Square Feet			
UL Recommended Spacing	50 Feet			
Maximum Distance from Wall - (see note <u>C</u>)	25 Feet			
All detectors have one normally open contact rated as follows: 3.0A at 6 to 125Vac, 1.0A at 6 to 24Vdc, 0.3A at 125Vdc, and 0.1A at 250Vdc.				
<u>NOTE A</u> - A catalog number ending with -PL indicates detector is supplied with reversible plastic mounting plate.				
<u>NOTE B</u> - Maximum detector coverage has been determined by UL to provide detection time equal to sprinkler devices spaced at 10-ft intervals (100 square foot area) on a smooth ceiling 15 ft 9 in high. Higher ceilings can adversely affect detection time. In some instances, earlier detection may be obtained by reducing the spacing between detectors. See the latest edition of the NFPA 72E, Automatic Fire Detectors.				
<u>NOTE C</u> - Maximum distance shown is from any wall partition or ceiling projection extending down more than 12 inches.				

WARNINGS

1. This device does not protect life against fire and smoke. In most fires, hazardous levels of smoke, heat and toxic gases can build up before a heat detector would operate. Independent studies indicate that heat detectors should only be used when property protection alone is involved. In cases where life safety is a factor, the use of smoke detectors is recommended.

The intended use of this Heat Detector is to provide one source of information that is supplemental to smoke detection to increase the probability that an early warning will be provided so that property can be safeguarded. Heat detectors do not always detect fires because the fire may be a slow smoldering low heat type (producing smoke) or because they may not be near where the fire occurs, or because the heat of the fire may bypass them. This detector will not detect oxygen levels, smoke, toxic gases, or flames. Accordingly, this device should only be used as a part of a broadly based program of fire safety which would include a variety of sources of information on heat and smoke levels, visual sighting of the fire, extinguishment systems, and other safety measures.

If they are spaced in accordance with the directions in the "Specifications Table" they can contribute, within an overall fire safety program, to reducing the risk of avoidable property losses. Under no circumstances should these devices be relied on as the sole measure to ensure fire safety. **Danger** will result if these devices are relied on to any degree for the protection of human life.

VOICE
EVAC

4001 N.W. GAINESVILLE ROAD
Ocala, FL 34475
352-732-2357

Standby Battery Calculation Forms

JOB NAME: CHUCK E CHEESE'S

ADDRESS: 3500 SW COLLEGE ROAD UNIT 200

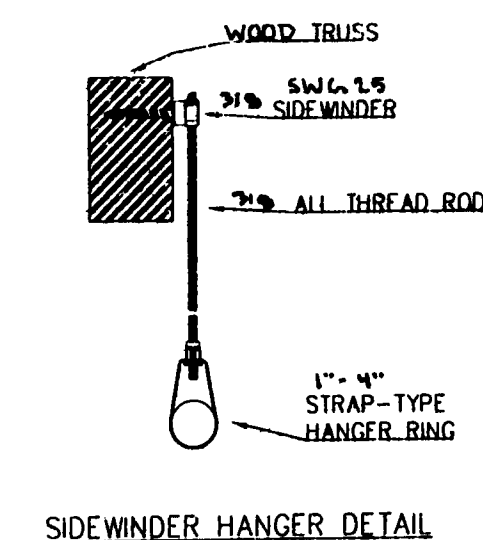
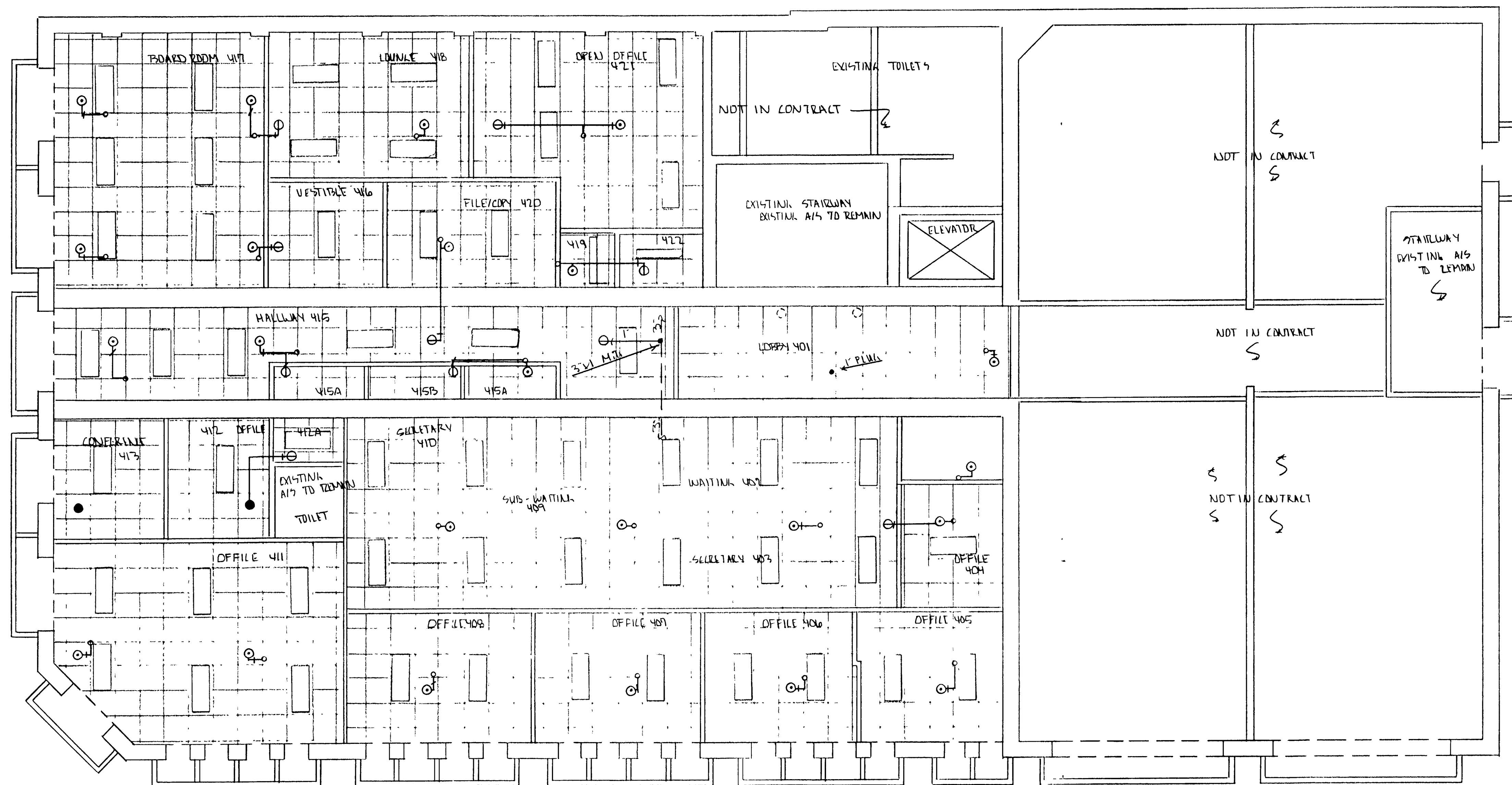
DEVICE	QUANTITY USED	AMPS EACH DEVICE		TOTAL AMPS	
		NORMAL	ALARM	NORMAL	ALARM
SILENT KNIGHT SKE 450 VOICE EVAC	1	.140	.490	.140	.490
SILENT KNIGHT SP2R1224AL SPEAKER STROBE	14	0	.048	0	.672
TOTAL				.140	1.162

Standby Battery Calculation Forms

JOB NAME:
JOB ADDRESS:

SYSTEM TYPE:	NFPA 71 Central Station	NFPA 72 Local or Proprietary	NFPA 72 Auxiliary or Remote	NFPA 74 Household
Total normal Amps		.140		
X Normal time	24	24	60	24
=Normal Amp Hours		3.36		
Total Alarm Amps	N/A	1.162		
X Alarm Time	N/A	.08333 *	.08333 *	.06666 *
= Total Alarm Amp Hours	N/A	.0970		
Normal Amp Hours + Alarm Amp Hours = Total Amp Hours		3.457		
+20% (X .i) Recommended Contingency		.692		
Total Required Amp Hours		4.149		

NOTE .08333 = 5 MINUTES AND .0666 = 4 MINUTES



GENERAL NOTES

ALL COMPONENTS AND INSTALLATION
PER N.F.P.A. 13 1999 CODES, REGULATIONS
AND LOCAL AUTHORITIES.

LIGHT HAZARD - BANK

LIGHT HAZARD HEAD SPACING IS 225 SQ FT MAXIMUM

ALL NEW ARMEDS ARE 1" SCHEDULE 30 WITH THREADED FITTINGS

ALL NEW BRANCHLINES ARE SIZED AS PER THE EXISTING PIPE SIZE

THE EXISTING SYSTEM WAS CALCULATED FOR LIGHT HAZARD

INSTALL AS PER PLAN

EXISTING PIPE - - - - -

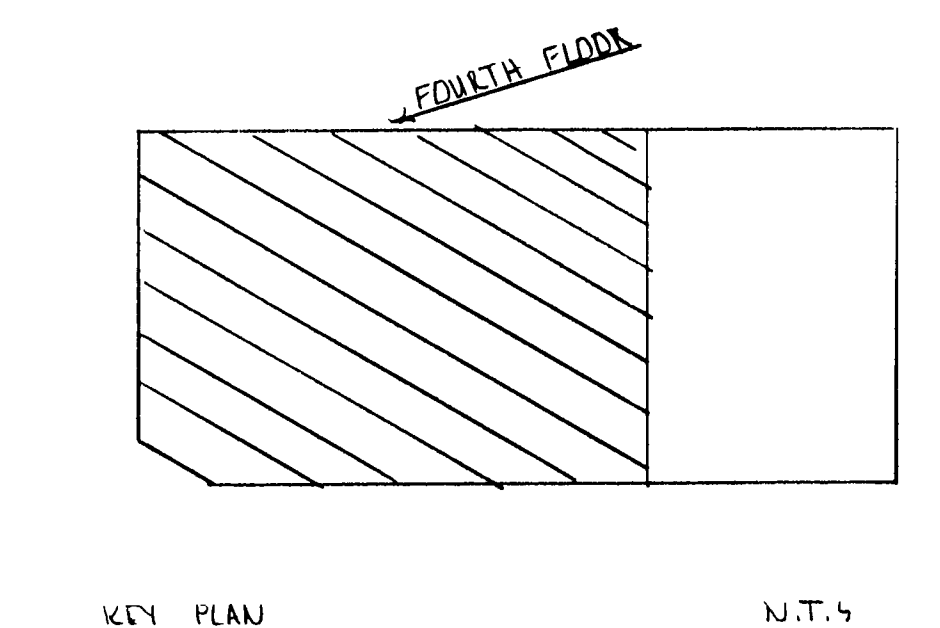
NEW PIPE _____

HANGER _____

SPRINKLER NOTES

- 10 ⊖ NEW 1/2" 155° RELIABLE FIFR PENDENT RECESSED CHROME
- 23 ● PENDENT TO BE ADJUSTED TO THE CEILING HEIGHT
- 2 ⊕ RELOCATED PENDENT
- ⊖ EXISTING PENDENT TO REMAIN
- ⊙ EXISTING 1" OUTLET

35 TOTAL



ALL SANITARY SEWER SERVICES PERTAINING TO
THIS SITE SHALL BE FIELD EXCAVATED BY THE
CONTRACTOR PRIOR TO ANY CONSTRUCTION IN
ORDER TO DETERMINE ACTUAL INVERTS AND
LOCATIONS.

These plans have been checked to meet all codes which
the City of Ocala enforces. If there are any errors,
omissions, or oversights made by the person(s)
checking these plans, this does not omit the
enforcement of these said codes, and no CO will be
issued until the said code violation(s) are corrected.

David L. Jones
Signature

REVIEWED

DEC 14 2004

BY *[Signature]*
CITY OF OCALA

NOTE: IT IS THE OWNER'S RESPONSIBILITY TO MAINTAIN THE FIRE SPRINKLER SYSTEM PER THE REQUIREMENTS OF NFPA 13	
CREDIBILITY SOUTHERN INSURANCE	REVIEWER _____ DATE: 12-7-04
FIRE PROTECTION OF ORLANDO, INC. 3801 EAST WY 48 SANFORD, FL 32771 (407) 380-2800	SCALE: 3/16" = 1'-0"
CITY OF OCALA	CONTRACT NO. STANTFORD 0037
RENOVATION	CONTRACT NO. 505471
	SHEET NO. 1 of 1

FIRE PROTECTION PLAN 3/16" = 1'-0"

File Copy

OCALA FIRE RESCUE

Fire Safety Management Division

Fire Marshal Barry Britton

Fire Investigator Dennis Lawson

Fire Inspector Alan Peters

Telephone: 352-629-8513

To: Plans Examiner - Building Department
From: Alan Peters – Fire Inspector
Date: December 3, 2004
Re: Fire Alarm Plan – ELE04-1485

Chuck E. Cheese

3500 S.W. College Road, #200

Ocala, FL.

Comments:

1. The proposed fire alarm system shall be in strict accordance with NFPA 72.
2. Remote duct detector test switches shall be provided where duct detectors are concealed or inaccessible.
3. Please call the Ocala Fire Dispatch Center @ (352) 369-7002 when any fire protection systems are taken out of service.
4. Please call the Ocala Fire Marshal's office at 352-629-8513 for all required fire department inspections.

FIRE ALARM

4801 N.W. Gainesville Road
Ocala, FL 34475
352-732-2357

Standby Battery Calculation Forms

JOB NAME: <u>CHUCK E CHEESE'S</u>					
ADDRESS: <u>3500 S/W COLLEGE ROAD UNIT 200</u>					
DEVICE	QUANTITY USED	AMPS EACH DEVICE		TOTAL AMPS	
		NORMAL	ALARM	NORMAL	ALARM
SILENT KNIGHT 5204 FIRE ALARM	1	.120	.400	.120	.400
SILENT KNIGHT 5205 COMMUNICATOR	1	.010	.100	.010	.100
SILENT KNIGHT 5230 ANNUNCIATOR	1	.060	.120	.060	.120
SYSTEM SENSOR I3 SMOKE DETECTOR	1	.00005	.023	.00005	.023
SYSTEM SENSOR SPR1224ML SPRINKLER STROBE (SEALERS ONLY)	14	0	.079	0	1.106
RMS IT PULL STATION	3	0	0	0	0
EDWARDS/AIP 281B HEAT DETECTOR	1	0	0	0	0
TOTAL				.19005	1.749

PAGE 1

Standby Battery Calculation Forms

JOB NAME:

JOB ADDRESS:

SYSTEM TYPE:	NFPA 71 Central Station	NFPA 72 Local or Proprietary	NFPA 72 Auxiliary or Remote	NFPA 74 Household
Total normal Amps		.19005		
X Normal time	24	24	60	24
=Normal Amp Hours		4.5612		
Total Alarm Amps	N/A	1.749		
X Alarm Time	N/A	.08333 *	.08333 *	.06666 *
= Total Alarm Amp Hours	N/A	.1458		
Normal Amp Hours + Alarm Amp Hours = Total Amp Hours		4.707		
+10% (x .1) Recommended Contingency		.9414		
Total Required Amp Hours		5.649		

NOTE .08333 = 5 MINUTES AND .0666 = 4 MINUTES

MODEL 5204

Fire Control/Communicator

Installation and
Operation Manual

Part Number 150644D, 6/01

Section 2

Specifications and System Planning

2.1 Electrical Specifications

Circuit	12-Volt Panel	24-Volt Panel
Primary AC	120 Vrms at 60 Hz, 2500 mA rms	120 Vrms at 60 Hz, 2500 mA rms
Total External DC Load	3.0A	3.0A
Accessory Power	9.5 V to 13.8 V max., 1500 mA	19.7 V to 27.6 V max., 1500 mA
+12 V Accessory Power	8.0 V to 14.0 V, 175 mA	11.5 V to 14.0 V, 175 mA
Bell Power	9.3 V to 13.8 V max., 1500 mA	19.8 V to 27.6 V max., 1500 mA
Smoke Power	9.3 V to 13.8V max., 1000 mA	19.7 V. to 27.6 V. max., 1000 mA
Battery Charging Voltage	13.5 to 13.8 V	27.0 V - 27.6 V
Minimum Low Battery Detect	10.2 V	20.4 V
Minimum Low AC Detect	100 Vrms at 60 Hz, full load	100 Vrms at 60 Hz, full load
Minimum Class B Trouble Detect	1.5 mA	2.4 mA
Maximum Class B Alarm Detect	11.7 mA	12.1 mA
Maximum Watchdog Response Time	50 sec.	50 sec.
Note: When running at full load, it is normal for the main heatsink to be hot.		

2.2 Environmental Specifications

It is important to protect the 5204 control panel from water. To prevent water damage, the following conditions should be AVOIDED when mounting the units:

- Do not mount directly on exterior walls, especially masonry walls (condensation)
- Do not mount directly on exterior walls below grade (condensation)
- Protect from plumbing leaks
- Protect from splash caused by sprinkler system inspection ports
- Do not mount in areas with humidity-generating equipment (such as dryers, production machinery)

When selecting a location to mount the 5204 control panel, the unit should be mounted where it will NOT be exposed to temperatures outside the range of 0° C-49° C (32° F-120° F) or humidity outside the range of 10%-85% at 30° C (86° F) noncondensing.

See also the mounting recommendations in Section 5.5.



Photoelectric Smoke Detector

Models: 2W-B, 2WT-B
4W-B, 4WT-B



3825 Ohio Avenue, St. Charles, Illinois 60174
1-800-SENSOR2, FAX: 630-377-6495
www.systemsensor.com

Before Installing

Please read thoroughly System Sensor manual A05-1003, *Application Guide: System Smoke Detectors*, which provides detailed information on detector spacing, placement, zoning, wiring, and special applications. Copies of this manual are available from System Sensor at no charge.

NOTICE: This manual shall be left with the owner/user of this equipment.

IMPORTANT: This detector must be tested and maintained regularly following NFPA 72 requirements. At a minimum, cleaning should be performed annually.

General Description

Models 2W-B and 2WT-B are 2-wire photoelectric smoke detectors; models 4W-B and 4WT-B are 4-wire photoelectric smoke detectors. All models incorporate a state-of-the-art optical sensing chamber and an advanced microprocessor. The microprocessor allows the detector to automatically adjust its sensitivity back to the factory setting when it becomes more sensitive due to contaminants settling in its chamber. In order for this feature to work properly, the chamber must never be opened while power is applied to the smoke detector. This includes cleaning, maintenance or screen replacement. Should it become necessary, the screen/sensing chamber is field replaceable. Models 2WT-B and 4WT-B also feature a restorable, built-in, fixed temperature (135°F) thermal detector and are also capable of sensing a freeze condition if the temperature is below 41°F.

All i³ Series detectors are designed to provide open area protection. Two-wire models must be used with compatible UL Listed panels only.

When used with an i³ Series compatible control panel or the i³ Series 2W-MOD module (refer to installation manual D500-46-00), the 2W-B and 2WT-B are capable of generating a "maintenance needed" signal. The 2W-MOD can indicate a need for cleaning, replacement, or a freeze condition (2WT-B only) at the control panel or module.

Installation of the 2W-B, 2WT-B, 4W-B, and 4WT-B detectors is simplified by the use of a mounting base that may be pre-wired to the system, allowing the detector to be easily installed or removed. The mounting base installation is further simplified by the incorporation of features compatible with drywall fasteners.

Two LEDs on the detector provide a local visual indication of the detector's status:

Table 1: Detector LED Modes

	Green LED	Red LED
Power-up	Blink 10 sec	Blink 10 sec
Normal (standby)	Blink 5 sec	—
Out of sensitivity	—	Blink 5 sec
Freeze Trouble	—	Blink 10 sec
Alarm	—	Solid

After an initial power-up delay, the red and green LEDs will blink synchronously once every ten seconds. It will take approximately 80 seconds for the detector to finish the power-up cycle (see Table 2).

Table 2: Power-up Sequence for LED Status Indication*

Condition	Duration
Initial LED Status Indication	80 seconds
Initial LED Status Indication (if excessive electrical noise is present)	4 minutes

*Refer to Electrical Specifications for power up to alarm time.

NOTE: If, during power-up, the detector determines there is excessive electrical noise in the system such as those caused by improper grounding of the system or the conduit, both LEDs will blink for up to 4 minutes before displaying detector status (see Table 2).

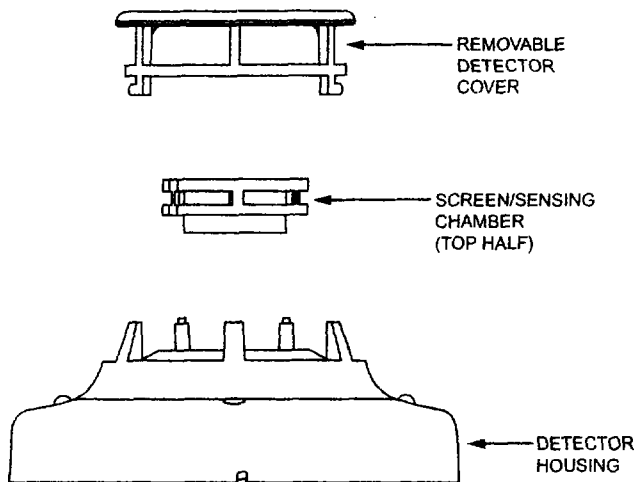
After power-up has completed and the detector is functioning normally within its listed sensitivity range, the green LED blinks once every five seconds. If the detector is in need of maintenance because its sensitivity has shifted outside the listed limits, the red LED blinks once every five seconds. When the detector is in the alarm mode, the red LED latches on. The LED indication must not be used in lieu of the tests specified under **Testing**. In a freeze trouble condition, the red LED will blink once every 10 seconds (refer to Table 1).

To measure the detector's sensitivity, the i³ Series Model SENS-RDR Infrared Sensitivity Reader tool (see Figure 4) should be used.

Models 2W-B and 2WT-B also include an output that allows an optional Model RA400Z Remote Annunciator to be connected.

1. Remove the detector cover by turning counterclockwise. (See Figure 5.)
2. Vacuum the cover or use canned air to remove any dust or debris.
3. Remove the top half of the screen/sensing chamber by lifting straight up (Figure 5).
4. Vacuum or use canned air to remove any dust or particles that are present on both chamber halves.
5. Replace the top half of the screen/sensing chamber by aligning the arrow on the screen/sensing chamber with the arrow on the housing. Press down firmly until the screen/sensing chamber is fully seated.
6. Replace the detector cover by placing it over the screen/sensing chamber and turning it clockwise until it snaps into place.
7. Reinstall the detector and test. (See the **Testing** section.)
8. Notify the proper authorities when the system is back in service.

Figure 5: Removing/Replacing Screen/Sensing Chamber



A78-2713-00

Electrical Specifications	2-wire	4-wire
System Voltage - Nominal:	12/24	12/24 Volts Non-polarized
Min.:	8.5	8.5 Volts
Max.:	35	35 Volts
Max. Ripple Voltage:	30	30 % peak to peak of applied voltage
Max. Standby Current:	50	50 μ A average
Peak Standby Current:	100	— μ A
Max. Start-up Capacitance:	0.1	— μ F
Latching Alarm:	Reset by momentary power interruption	
Maximum Initial Start-up Time:	45	15 sec
Power-up Time after 10 sec. reset:	15	15 sec
Max. Alarm Current:	130	20 mA 12 Volt Systems
(For 2W-B and 2WT-B, panel must limit current)	130	23 mA 24 Volt Systems
Alarm Contact Ratings:	—	0.5 Amp @ 30 V AC/DC
Alarm Reset Time:	0.3	0.3 sec

Physical Specifications

Heat Sensor

(Model 2WT-B and 4WT-B): 135°F (57.2°C)

Freeze Trouble

(Model 2WT-B and 4WT-B): 41°F (5°C)

Operating Temperature Range:

2W-B and 4W-B: 32 to 120°F (0 to 49°C)

2WT-B and 4WT-B: 32 to 100°F (0 to 37.8°C)

Operating Humidity Range:

0 to 95% RH non-condensing

Storage Temperature Range:

-4 to 158°F (-20 to 70°C)

Diameter (including base):

5.3 inches

Height (including base):

2.0 inches

Weight:

6.3 oz.

Please refer to insert for the Limitations of Fire Alarm Systems

Three-Year Limited Warranty

System Sensor warrants its enclosed smoke detector to be free from defects in materials and workmanship under normal use and service for a period of three years from date of manufacture. System Sensor makes no other express warranty for this smoke detector. No agent, representative, dealer, or employee of the Company has the authority to increase or alter the obligations or limitations of this Warranty. The Company's obligation of this Warranty shall be limited to the repair or replacement of any part of the smoke detector which is found to be defective in materials or workmanship under normal use and service during the three year period commencing with the date of manufacture. After phoning System Sensor's toll free number 800-SENSOR2 (736-7672) for a Return Authorization number, send defective units postage prepaid to: System Sensor,

Repair Department, RA # _____, 3825 Ohio Avenue, St. Charles, IL 60174. Please include a note describing the malfunction and suspected cause of failure. The Company shall not be obligated to repair or replace units which are found to be defective because of damage, unreasonable use, modifications, or alterations occurring after the date of manufacture. In no case shall the Company be liable for any consequential or incidental damages for breach of this or any other Warranty, expressed or implied whatsoever, even if the loss or damage is caused by the Company's negligence or fault. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

SPECTRAAlert

Selectable Output Wall Speaker/Strobes



Models Available

SP2R1224MC SP2W1224MC

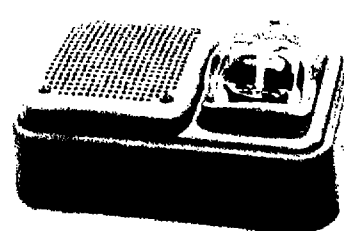
Accessory Back Box Skirt

BBS-SP2R BBS-SP2W

SP2R1224MC



Mounted with BBS-SP2R



Product Overview

Selectable Output. SpectraAlert Selectable Output Speaker/Strobes offer a wide range of candela options, allowing the user to select the appropriate output for the application.

Wide Voltage Range. 12V and 24V operation.

Power Tap Settings. The Selectable Output Strobe speaker/strobe offers average current draws that are not only lower than conventional fixed-candela SpectraAlert products, but also lower than similar selectable candela products. In addition, the broad frequency response range and low harmonic distortion provided by SpectraAlert speaker technology provides an accurate and intelligible broadcast of evacuation messages.

Field-Selectable. The Selectable Output Strobe speaker/strobe offers average current draws that are not only lower than conventional fixed-candela SpectraAlert products, but also lower than similar selectable candela products. In addition, the broad frequency response range and low harmonic distortion provided by SpectraAlert speaker technology provides an accurate and intelligible broadcast of evacuation messages.

Installation-Friendly. SpectraAlert Selectable Output Speaker/Strobes offer a variety of installation-friendly features, such as the ability to mount to a 4" x 4" x 2 1/4" back box without the need for an extension ring and with no encroachment into the box. Also, with the field-reversible strobe, the speaker/strobe may be either left- or right-mounted to avoid potential obstructions.

Flexibility. SpectraAlert Selectable Output Speaker/Strobes offer the broadest range of candela options. In addition, the Selectable Output Strobes and horn/strobes can operate on either 12V or 24V, with no setting required; the device recognizes and self-adjusts to the correct current automatically. The speaker voltage, either 25.0 or 70.7, and power tap settings, either 1/4, 1/2, 1, or 2 watt, are field-selectable.

Aesthetics. SpectraAlert Selectable Output Speaker/Strobes incorporate the same stylish, low profile design of the conventional SpectraAlert products, for a consistent and aesthetically pleasing appearance across the entire product line.

Patent-Pending Voltage Booster. The models SP2R1224MC and SP2W1224MC incorporate a new patent-pending voltage booster design that has a more consistent flash bulb voltage over the range of candela selections. The benefit to the customer is a high quality strobe device.

The models SP2R1224MC and SP2W1224MC incorporate a new patent-pending voltage booster design that has a more consistent flash bulb voltage over the range of candela selections. The benefit to the customer is a high quality strobe device.

Engineering Specifications

Speaker/Strobe shall be a System Sensor Model _____ listed to UL1480 and UL 1971 and be approved for fire protective signaling systems. Speaker shall be capable of operating at 25.0 or 70.7 nominal Vrms, and shall have a frequency range of 400 – 4000 Hz. Speaker shall have power taps that are selected by DIP switch. The strobe shall consist of a xenon flash tube with associated lens/reflector system and operate on either 12V or 24V. The strobe shall also feature selectable candela output, providing options for 15 or 15/75 candela when operating on 12V and 15, 15/75, 30, 75, or 110 when operating on 24V. The strobe shall comply with the Americans with Disabilities Act requirement for visible signaling appliances, flashing at 1 Hz over the strobe's entire operating voltage range.



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MEA
approved
127 02 E

General Specifications

Dimensions
4 7/8" x 8 1/4" x 2 1/4"

Mounting
4" x 4" x 2 1/4" back box

Indoor Operating Temperature
32° to 120° F (0° to 49° C)

Strobe Specifications

Strobe Operating Voltage
12 or 24 VDC and FWR unfiltered

Operating Voltage Range*
12V: 9.5-17.5V; 24V: 16-33V

* These products should be operated within their rated voltage range. UL does however, test functional integrity to -20% and +10% of manufacturer's stated ranges.

Input Terminals
12 to 18 AWG

Operating Voltage Range w/
Sync-Circuit Module*
12V: 10.5-17.5V; 24V: 17-33V

Speaker Specifications

Input Voltage
25.0 or 70.7 Vrms (nominal)

Frequency Range
400-4000 Hz
The SP2 Series is UL listed from 400 to 4000Hz but will provide an output from 100 to 10,000Hz.

Power Taps
1/4, 1/2, 1 and 2 watts

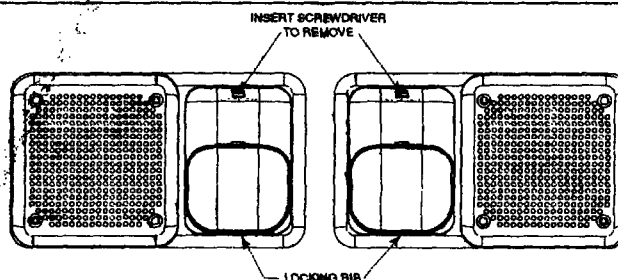
Input Terminals
12 to 18 AWG

U.S. Patent No.
6,049,446

	2 Watts	1 Watt	1/2 Watt	1/4 Watt
Sound Output (UL Reverberant @ 10ft.)	84	81	78	75
Sound Output (UL Anechoic @ 10ft.)	87	84	81	78

Reversible Strobe Feature

Removing the strobe screw and lifting the strobe assembly (A), out of the rib slot allows the strobe to be rotated 180° and remounted to the base resulting in a left-mounted strobe configuration (B).



Ordering Information/Current Draw

Description	Model No.			Current (mA)											
				Avg @ 12V		Avg @ 24V		Peak @ 12V		Peak @ 24V		In Rush @ 12V		In Rush @ 24V	
	Red	White	Candela	DC	FWR	DC	FWR	DC	FWR	DC	FWR	DC	FWR	DC	FWR
Wall Speaker/Strobe	SP2R1224MC	SP2W1224MC	15	65	59	42	38	174	159	129	165	79	87	133	177
			15/75	79	69	48	43	175	254	159	206	61	79	123	171
			30	NA	NA	57	68	NA	NA	159	206	NA	NA	131	175
			75	NA	NA	100	90	NA	NA	251	430	NA	NA	119	175
			110	NA	NA	130	118	NA	NA	314	370	NA	NA	131	181
Surface-mount back box skirt	BBS-SP2R	BBS-SP2W	—	—	—	—	—	—	—	—	—	—	—	—	—

System Sensor Sales and Service

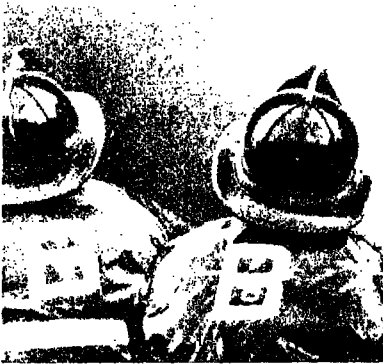
System Sensor Headquarters
3825 Ohio Avenue
St. Charles, IL 60174
Ph: 800/SENSOR2
Fx: 630/377-6495
Documents-on-Demand
800/736-7672 x3
www.systemsensor.com

System Sensor Canada
Ph: 905.812.0767
Fx: 905.812.0771
System Sensor Europe
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Fx: 44.1403.276501

System Sensor in China
Ph: 86.29.524.6253
Fx: 86.29.524.6259
System Sensor in Singapore
Ph: 65.6273.2230
Fx: 65.6273.2610

System Sensor - Far East
Ph: 85.22.191.9003
Fx: 85.22.736.6580
System Sensor - Australia
Ph: 613.54.281.142
Fx: 613.54.281.172

System Sensor - India
Ph: 91.124.637.1770 x.2700
Fx: 91.124.637.3118



SKE-Series Voice Evacuation System Model SKE-450 and Model SKE-450-ZN4



The SKE-Series Voice Evacuation System provides maximum flexibility to accommodate your voice evacuation requirements

The SKE-Series Voice Evacuation system provides 50 watts of output power. The SKE-Series system consists of two different models, the SKE-450 and SKE-450-ZN4. Each model has a built in Digital Message Repeater, power supply and a supervised microphone. Both models have two alarm inputs, one triggered by reverse polarity and one by supervised dry contact trigger. The system supports 25 or 70.7 VRMS operation to accommodate most installations. The audio messages are field programmable via the built in microphone, through the line level input, or by downloading via the internet. The model SKE-450-ZN4 also contains a zone splitter capable of dividing the speaker output into 4 separate outputs.

SKE-Series Voice Evac. System

The SKE-450 and SKE-450-ZN4 voice evacuation are activated when one of the two alarm inputs are tripped. When this occurs the control will output a pre-recorded audio message corresponding to the alarm input that was tripped. The repetition of the digital audio message and the selected notification output are completely programmable.

The SKE-450-ZN4 comes equipped with a 4 zone splitter capable of dividing the speaker output from the amplifier into four Class B or Class A outputs. The zone splitter also has an All Call feature that will activate all speaker zones regardless of the individual toggle switch settings.

Both models provide seven visual indicators for, Speaker Trouble, Alarm, Microphone Trouble, Command 2 Trouble, Earth Ground Fault, Low Battery, and Power.

Features

- 50 watts of output power on a 25 or 70.7 VRMS speaker circuit. The speaker circuit can be Class A or B. Provides maximum flexibility for new or retrofit jobs.
- Downloadable Voice Messages via direct connect. If you need a different message download it from the SK website free of charge!

- Digital Message Repeater -Built in to the SKE motherboard. No additional wiring to install makes setup fast and easy. Capable of storing three messages, messages one and two are built in messages of up to 30 seconds. Message three is field programmable and can be up to 49 seconds long.
- Digital Signal Processor -Processes digital quality audio, generates tones and provides control functions.
- Supervised Microphone -The built in supervised microphone provides system paging function and field message programming capability.
- Dead Front Cabinet - Provides protection for users, prevents tampering with system electronics.
- Dedicated relays-Built in form "C" relays for alarm and trouble increase flexibility and keeps installation cost down.
- Two Inputs-One reverse polarity input and one supervised dry contact input provides maximum flexibility.
- Built in system power is capable of operating the system and charging system backup batteries.
- Zone Splitter SKE-ZN4 is capable of providing 4 separate class B or class A output circuits. Each circuit is capable of handling the full amplifier output. The ZN4 provides paging by zone or all call.



SKE-Series Voice Evacuation Listing/Approvals

- UL Listed
- MEA approval 429-92-E Vol. XIII
- CSFM Listed



**SILENT
KNIGHT**

SKE-Series Voice Evacuation System Model SKE-450 and Model SKE-450-ZN4



Engineering Specifications

The system shall contain a voice evacuation system to supervise and operate UL listed voice evacuation speakers. The system shall have a built in UL listed power supply. The system shall be capable of supporting an optional UL listed zone splitter that can be housed in the main voice control cabinet. In addition, the system will issue pre-recorded voice commands locally for purpose of evacuation. The system must support a minimum of two pre-recorded messages and have the capability of adding application specific messages through the use of a PC. The voice evacuation system shall have the ability to provide a supervised microphone for the purpose of audible local instructions that will override the pre-recorded messages. The system shall contain a dead front panel inside the enclosure to protect the circuitry from tampering and to protect the operator from hazardous voltages.

Specifications

Operating Voltage: 120 Vrms @ 60Hz /
*230 Vrms @ 50Hz
(*ask for HV version)

Current Draw:
Standby: 140 mA
Alarm: 490 mA

ZN4 Current Draw:
Standby: 45 mA
Alarm: 250 mA
(all channels)

Flush Mount
Dimensions:
Height: 24.75" (62.9 cm)
Width: 14.5" (36.8 cm)
Depth: 3-7/16" (8.73 cm)
with 5/8" protruding

Overall Dimensions
Height: 26-3/8" (67 cm)
Width: 17-3/16" (43.66 cm)
Total Depth: 4" (10.16 cm)

Operating Temp.: 32° to 120° F
(0° to 49° C)

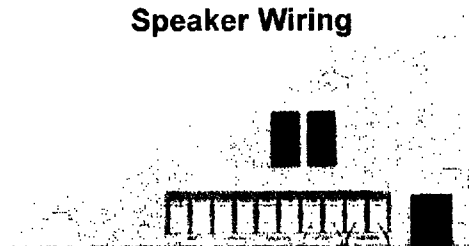
Humidity: 10 to 85% RH

Optional Accessories

SKE-V70 Module—converts speaker circuit voltage from 25 to 70.7 Vrms.

SKE-SRM—Supervised Remote Microphone.

Speaker Wiring



Dotted Line is return wires for Class A (Style Z) Supervision

EOL Resistor and Solid Line is Class B (Style Y) Supervision

Command 1 Wiring

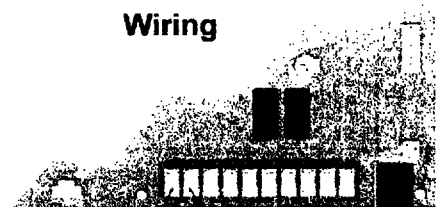


Dotted Line is Class A (Style Z) Supervision

EOL Resistor and Solid Line is for Class B (Style Y) Supervision

Alarm polarity shown

Command 2 Wiring



FACP



7550 Meridian Circle, Maple Grove, MN 55369-4927
800-446-6444 or in Minnesota 763-493-6435
FAX: 763-493-6475
World Wide Web: <http://www.silentknight.com>

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SPECTRAAlert Selectable Output Wall Speaker/Strobes



Models Available

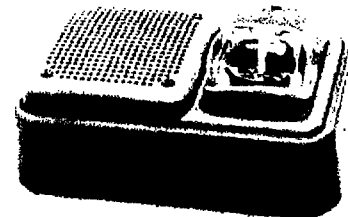
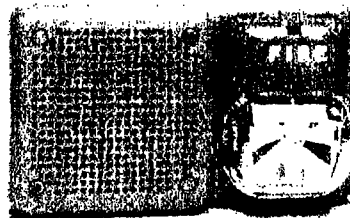
SP2R1224MC SP2W1224MC

Accessory Back Box Skirt

BBS-SP2R BBS-SP2W

SP2R12247C

Mounted with BBS-SP2R



Product Overview

The Selectable Output Strobe speaker/strobe offers a variety of features that include:

- A wide range of candela options
- 12V: 15 and 15/75 candela options
- 24V: 15, 15/75, 30, 75, and 110 candela options
- A field-reversible strobe
- A low profile design
- A wide range of power taps
- A wide range of voltage options
- A wide range of mounting options
- A wide range of mounting options
- A wide range of mounting options

The models SP2R1224MC and SP2W1224MC incorporate a new patent-pending voltage booster design that has a more consistent flash bulb voltage over the range of candela selections. The benefit to the customer is a high quality strobe device.

Engineering Specifications

The Selectable Output Strobe speaker/strobe offers a variety of features that include:

Performance. The Selectable Output Strobe speaker/strobe offers average current draws that are not only lower than conventional fixed-candela SpectraAlert products, but also lower than similar selectable candela products. In addition, the broad frequency response range and low harmonic distortion provided by SpectraAlert speaker technology provides an accurate and intelligible broadcast of evacuation messages.

Installation. SpectraAlert Selectable Output Speaker/Strobes offer a variety of installation-friendly features, such as the ability to mount to a 4" x 4" x 2 1/4" back box without the need for an extension ring and with no encroachment into the box. Also, with the field-reversible strobe, the speaker/strobe may be either left- or right-mounted to avoid potential obstructions.

Flexibility. SpectraAlert Selectable Output Speaker/Strobes offer the broadest range of candela options. In addition, the Selectable Output Strobes and horn/strobes can operate on either 12V or 24V, with no setting required; the device recognizes and self-adjusts to the correct current automatically. The speaker voltage, either 25.0 or 70.7, and power tap settings, either 1/4, 1/2, 1, or 2 watt, are field-selectable.

Aesthetics. SpectraAlert Selectable Output Speaker/Strobes incorporate the same stylish, low profile design of the conventional SpectraAlert products, for a consistent and aesthetically pleasing appearance across the entire product line.



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Speaker/Strobe shall be a System Sensor Model _____ listed to UL1480 and UL 1971 and be approved for fire protective signaling systems. Speaker shall be capable of operating at 25.0 or 70.7 nominal Vrms, and shall have a frequency range of 400 - 4000 Hz. Speaker shall have power taps that are selected by DIP switch. The strobe shall consist of a xenon flash tube with associated lens/reflector system and operate on either 12V or 24V. The strobe shall also feature selectable candela output, providing options for 15 or 15/75 candela when operating on 12V and 15, 15/75, 30, 75, or 110 when operating on 24V. The strobe shall comply with the Americans with Disabilities Act requirement for visible signaling appliances, flashing at 1 Hz over the strobe's entire operating voltage range.

General Specifications

Dimensions
4 1/4" x 8 1/4" x 2 1/4"

Mounting
4" x 4" x 2 1/4" back box

Indoor Operating Temperature
32° to 120° F (0° to 49° C)

Strobe Specifications

Strobe Operating Voltage
12 or 24 VDC and FWR unfiltered

Operating Voltage Range*
12V: 9.5–17.5V; 24V: 16–33V

* These products should be operated within their rated voltage range. UL does however, test functional integrity to –20% and +10% of manufacturer's stated ranges.

Input Terminals
12 to 18 AWG

Operating Voltage Range w/
Sync-Circuit Module*
12V: 10.5–17.5V; 24V: 17–33V

Speaker Specifications

Input Voltage
25.0 or 70.7 Vrms (nominal)

Frequency Range
400–4000 Hz
The SP2 Series is UL listed from 400 to 4000Hz but will provide an output from 100 to 10,000Hz.

Power Taps
1/4, 1/2, 1 and 2 watts

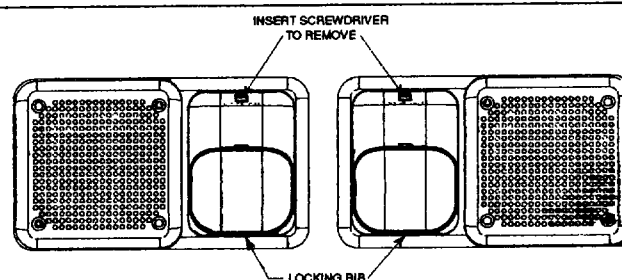
Input Terminals
12 to 18 AWG

U.S. Patent No.
6,049,446

	2 Watts	1 Watt	1/2 Watt	1/4 Watt
Sound Output (UL Reverberant @ 10ft.)	84	81	78	75
Sound Output (UL Anechoic @ 10ft.)	87	84	81	78

Reversible Strobe Feature

Removing the strobe screw and lifting the strobe assembly (A), out of the rib slot allows the strobe to be rotated 180° and remounted to the base resulting in a left-mounted strobe configuration (B).



Ordering Information/Current Draw

Description	Model No.			Current (mA)							
				Avg @ 12V		Avg @ 24V		Peak @ 12V		Peak @ 24V	
	Red	White	Candela	DC	FWR	DC	FWR	DC	FWR	DC	FWR
Wall Speaker/Strobe	SP2R1224MC	SP2W1224MC	15	65	59	42	38	174	159	129	165
			15/75	79	69	48	43	175	254	159	206
			30	NA	NA	57	68	NA	NA	159	206
			75	NA	NA	100	90	NA	NA	251	430
			110	NA	NA	130	118	NA	NA	314	370
Surface-mount back box skirt	BBS-SP2R	BBS-SP2W	—	—	—	—	—	—	—	—	—

System Sensor Sales and Service

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St. Charles, IL 60174
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Fx: 630/377-6495
Documents-on-Demand
800/736-7672 x3
www.systemsensor.com

System Sensor Canada
Ph: 905.812.0767
Fx: 905.812.0771

System Sensor Europe
Ph: 44.1403.276500
Fx: 44.1403.276501

System Sensor in China
Ph: 86.29.524.6253
Fx: 86.29.524.6259

System Sensor in Singapore
Ph: 65.6273.2230
Fx: 65.6273.2610

System Sensor - Far East
Ph: 85.22.191.9003
Fx: 85.22.736.6580

System Sensor - Australia
Ph: 613.54.281.142
Fx: 613.54.281.172

System Sensor - India
Ph: 91.124.637.1770 x.2700
Fx: 91.124.637.3118